

C. cont. and the at least one polarization hologram produced by a same reference beam and a signal beam that is polarization modulated by a spatial light modulator to simultaneously record the at least one light intensity hologram and the at least one polarization hologram as gratings, the at least one light intensity hologram being generated by a signal beam and a reference beam with a polarization direction of the signal beam in parallel with a polarization direction of the reference beam, and the at least one polarization hologram produced by the signal beam and the reference beam with the polarization direction of the signal beam perpendicular to the polarization direction of the reference beam.

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#### REMARKS

By this Amendment, claim 53 is canceled. Accordingly, claims 1-7 are pending. Claim 1 is amended. No new matter is added. The attached Appendix includes marked-up copies of each rewritten claim (37 C.F.R. §1.121(c)(1)(ii)).

Entry of the amendments is proper under 37 CFR §1.116 since the amendments: (a) place the application in condition for allowance, as discussed with the Examiner; and (b) place the application in better form for appeal, should an appeal be necessary. Entry of the amendments is thus respectfully requested.

Reconsideration in view of the above amendments and following remarks is respectfully requested.

Applicants thank Examiner Angebrannt for the courtesy extended to Applicants' representatives, Klifton Kime and Gang Luo, during an October 21, 2002, personal interview. The substance of the interview is incorporated in the remarks below.

#### **I. Information Disclosure Statement**

The Examiner is respectfully requested to acknowledge consideration of the information provided in an Information Disclosure Statement filed on November 9, 2002. A

copy of the Form PTO-1449 is attached for the Examiner's convenience. The Examiner is respectfully requested to initial and return the Form PTO-1449.

**II. The Claims Satisfy All Formal Requirements**

The Office Action rejects claims 1-7 and 53 under 35 U.S.C. §112, second paragraph. Claim 1 is amended to obviate this rejection, as requested by the Examiner during the interview, by reciting that the ... light intensity hologram being generated by a signal beam and a reference beam with a polarization direction of the signal beam in parallel with a polarization direction of the reference beam, and the ... polarization hologram produced by the signal beam and the reference beam with the polarization direction of the signal beam perpendicular to the polarization direction of the reference beam. As discussed during the interview, these features are disclosed in the specification at, for example, page 13, line 31 - page 14, line 13 and Figs. 3(a) and 3(b). Claim 53 is canceled. Accordingly, withdrawal of the rejection under 35 U.S.C. §112, second paragraph is respectfully requested.

**III. The Claims Define Allowable Subject Matter**

The Office Action rejects claims 1 and 53 under 35 U.S.C. §102(b) over Sharnoff et al. (U.S. Patent No. 5,216,527); rejects claims 1 and 53 under 35 U.S.C. §102(a) over Ono (JP 09-269719); rejects claims 1, 2, 4 and 53 under 35 U.S.C. §103(a) over Sharnoff et al. in view of Todorov et al. (Polarization holographic 2: Polarization holographic gratings in photoanisotropic materials with and without intrinsic birefringence); rejects claims 1, 2, 4, 7 and 53 under 35 U.S.C. §103(a) over either Sharnoff et al. or Ono in view of Savant et al. (U.S. Patent No. 5,384,221); rejects claims 1-3, 5 and 55 under 35 U.S.C. §103(a) over either Sharnoff et al. or Ono in view of Natansohn et al. (U.S. Patent No. 5,173,381); rejects claims 1-3, 6 and 53 under 35 U.S.C. §103(a) over either Sharnoff et al. or Ono in view of Eich et al. (U.S. Patent No. 5,024,784); and rejects claims 1-7 and 53 under 35 U.S.C. §103(a) over either Sharnoff et al. or Ono in view of Natansohn et al. or Eich et al. combined with Savant

et al. These rejections are moot in respect to the canceled claim 53, and are respectfully traversed in respect to the remaining claims.

As discussed during the interview, although spatial light modulators are known, they are conventionally used to turn a signal on and off. As the Examiner acknowledged, the prior art of record does not disclose or suggest using a spatial light modulator to simultaneously record light intensity holograms and polarization holograms as gratings.

The Examiner noted during the interview that when two reference beams of orthogonal polarization and two object beams of orthogonal polarization are used to simultaneously record holograms, four holograms are formed as all the beams are able to interfere, although two interfere in the light intensity regime and two interfere only in the polarization regime. The Examiner nevertheless acknowledged that the same beam is not used in forming the holograms, as disclosed in the prior art of record. Therefore, Sharnoff et al., Ono, Todorov et al., Natansohn et al., Eich et al. and Savant et al., individually or in combination, do not disclose or suggest that the at least one light intensity hologram and the at least one polarization hologram are produced by a same reference beam and a signal beam that is polarization modulated by a spatial light modulator to simultaneously record the at least one light intensity hologram and the at least one polarization hologram as gratings, as recited in claim 1.

Furthermore, Applicants respectfully submit that claims 2-7 are each patentable in view of the patentability of claim 1, from which they depend, as well as the additional features they recite. Claim 53 is canceled. Accordingly, withdrawal of the rejections is respectfully requested.

**IV. Conclusion**

In view of the foregoing amendments and remarks, Applicants submit that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the claims are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number set forth below.

Respectfully submitted,



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JAO:GL/hs

**Attachments:**

Appendix

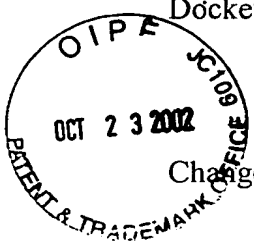
Copy of Form PTO-1449 filed with Information Disclosure Statement  
on November 9, 2000

Date: October 23, 2002

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## APPENDIX



Changes to Claims:

Claim 53 is canceled.

The following is a marked-up version of the amended claim 1:

1. (Twice Amended) An optical storage medium comprising a polarization-sensitive member having a photo-induced birefringence property, wherein information in a form of at least one light intensity hologram and at least one polarization hologram is multiplexingly stored by the optical storage medium, the at least one light intensity hologram and the at least one polarization hologram produced by a same reference beam and a signal beam that is polarization modulated by a spatial light modulator to simultaneously record the at least one light intensity hologram and the at least one polarization hologram as gratings, the at least one light intensity hologram being generated by a signal beam and a reference beam with a polarization direction of the signal beam in parallel with a polarization direction of the reference beam, and the at least one polarization hologram produced by the signal beam and the reference beam with the polarization direction of the signal beam perpendicular to the polarization direction of the reference beam.